giving longer disks in one part of the field than in another. But there is no real difficulty in identifying all the photographed stars.

Photograph No. 2, particularly in the original negative, shows the curious envelope extending 2° beyond the head. It is less distinctly seen in Photograph 3.

This preliminary communication will afterwards be supplemented.

Royal Observatory,
Cape of Good Hope:
1882, *Oct.* 31.

[Since the foregoing paper was received, Mr. Gill has forwarded to the Society three additional photographs of which the following are the particulars:—

No. 4. 1882 Nov. $7^d\ 14^h\ 42^m$ Cape M.T., Exposure $1^h\ 40^m$.
No. 5. 1882 Nov. $13^d\ 14^h\ 0^m$,, ,, $1^h\ 20^m$.
No. 6. 1882 Nov. $14^d\ 14^h\ 15^m$,, ,, $2^h\ 20^m$.]

Observations of the Great Comet (b) 1882, *made at Auckland, New Zealand.* By J. T. Stevenson.

(*Extract from a letter to the Rev. T. W. Webb.*)

. . . I have the pleasure of now sending you a few particulars of the beautiful comet at present visible here. . . . I will begin with the head, which to me appeared at first nearly equal to a first-magnitude star, and, I may add, was seen in New Zealand in broad daylight when it was in perihelion.

I find that when viewed in the telescope the head appears just like a double star, when the power is not sufficient to separate the disks; of course I do not mean that the head is double, but it is elongated in an east and west direction, which is at present the direction of the comet's motion. On the 5th instant and once before I saw a *minute* point in the nucleus which glowed brightly.

The Dark Space behind the Head.—I notice what seems rather remarkable in the dark space: namely, the fact that whereas I am almost positive in other comets which I have seen that the dark space was broad, yet in this, the most brilliant one seen for many years, this space is very narrow. I may mention also that the head appeared slightly inclined towards the axis of the tail, and that the dark space is not directly behind, but as if the head were a little north of the axis of this space in the tail.

The Tail.—This is grand in the extreme; I have never seen anything equal to it. At the extremity it is at least several times broader than the Moon's apparent diameter. I can see the faintest stars visible through even the thickest portion of it. With a small glass I can trace plainly the dark space running up through it from the head; and here I notice another peculiarity—namely, that this space is not central in the tail, but divides it into two unequal portions, the northern of which is much broader than the other. Up to October 6, on the occasions

on which I observed, there was also seen a fainter tail extending from the north part of the head and reaching as far as the brighter one; with the naked eye the northern part of the tail was seen to be *darker* than the other parts, and it is this part which I consider the second tail. I was particular in trying to trace it right down to the head, as I had a suspicion that it had a square-shouldered aspect (I might call it) where it joined the nucleus; but of this I was not sure.

Yesterday morning, however (Oct. 6), on looking at the comet, which was then very low, I was surprised to find that the fainter portion of the tail had extended itself on both sides of the head and appeared as a second tail *pointing towards the Sun*. I traced it fully two degrees beyond the nucleus—that is, in a direction contrary to the brighter tail.

I am aware that the nuclei of some comets are of considerable extent sometimes, but I do not think what I saw on this occasion could be considered any part of the nucleus. I may state that the finder of the telescope showed this appearance also, while in the telescope itself the region in front of the nucleus was misty and ill-defined. I had not noted this mistiness on any former occasion. I noticed particularly that this fainter tail made a small angle with the direction of the brighter one. There are only two ways in which I can account for this appearance not being noted before: either that the fainter tail is really expanding, or else that the waning Moon, or else a particularly fine morning, enabled greater detail to be visible.

Oct. 10.—I have longed to get another view of comet before the mail leaves, and after two days cloudy weather I succeeded this morning.

I found that the faint tail had now extended itself sunwards for (I think) more than four degrees. I again suspected that it was not quite parallel with brighter one, but am not sure on this point. I have noticed all along the bright tail is longer on its southern side, and also that the extremity of tail has a dark space which splits that portion nearly in two. . . .

The observations were made with a $6\frac{1}{2}$ Reflector by Calver.

Postscript by the Rev. T. W. Webb.

In addition to the corroboration which Mr. Gill has afforded with regard to this remarkable phenomenon, I beg permission to mention that I have since been informed by a gentleman named Jackson, at Constantinople, that on the 2nd or 3rd, as he believes, of October, he saw the same appearance with a 4-in. object-glass as "very faint parallel rays of light stretching from the head of the comet towards the Sun;" and that at a still later date I have been favoured with a communication from Professor Schiaparelli, in which he mentions this and other still more remarkable peculiarities as observed especially by himself, and in part by Schmidt, at Athens.

Hardwick Vicarage:
1882, *Nov.* 18.

Observations of the Great Comet (b) 1882, *made at the O'Gyalla Observatory, Hungary.* By Dr. N. de Konkoly.

The comet, when first observed, had already lost much of its former brightness, and until November 1 all observation was prevented by continuous clouds and rainy weather. Since that time I have seen it only once between clouds, but observations then were too difficult to make. Our moist climate, together with a considerable diminution in the brightness of the comet, gives but little hope for further observations.

The observations were made on November 1, 17^h Mean Time, with the 6″ Refractor of Merz, the view from the $9\frac{1}{2}$-in. Merz Refractor being limited by the dome of the 6-in. and by trees.

In the telescope the head of the comet was very remarkable. Its oblong nucleus sharply defined towards the tail, showed two brighter points of light. The nucleus appeared of a pretty strong yellow colour, while the coma was a little greenish. The tail was considerably curved upwards, and the edge turned towards the horizon was much brighter and better defined than the other. A radiation from the nucleus, which large comets generally show, did not exist, and the whole head of the comet appeared like a candlelight seen through fog. The edges, even of the nucleus, were exceedingly indefinite. The spectrum was compared with that of a Bunsen gas flame according to the method of Professor Vogel. The nucleus had a very intense continuous spectrum, the red end of which was very bright. I could not see any sodium line. The coma showed a tolerably bright comet spectrum, characterised by the hydrocarbon bands. Later in the morning the view being more open from the northern dome, the observations were made with the large refractor. I measured three of the bands, intended to measure a fourth, and suspected a fifth towards the red. Taking the intensity of the brightest band in the yellow-green as unity, the ratio of the intensities of the others is: 0·1 (?), 0·7, 1·0, 0·2, and 0·4. The first is the suspected band in the red. The following are the results expressed in wave-lengths.

	Mm.
I.	—
II.	562·0
III.	514·7
IV.	502·6 (?)
V.	472·

All lines seemed much thickened in the middle, and better defined toward the less refrangible end of the spectrum, while fainter toward the violet. The measurements of the spectrum of the Bunsen flame gave the following results:—